

USSN: 10/670,522
Amendment dated July 2, 2009
Reply to final Office Action of April 28, 2009

REMARKS

A. Introduction

Claims 1-4 and 6-11 were pending and under consideration in the application.

In the Office Action mailed April 28, 2009, claims 1-3, 6, and 8-11 were rejected as being anticipated by Kleinfelder, ISCC 2002/Session 6/ CMOS IMAGE SENSORS WITH EMBEDDED PROCESSORS/6.1 “A 10k frame/s 0.18 μ m CMOS Digital Pixel Sensor with Pixel-Level Memory” (hereinafter, “*Kleinfelder*”).

Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Kleinfelder* in view of Gowda, et al., U.S. 6,275,259 (hereinafter, “*Gowda*”).

Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Kleinfelder* in view of Bell, et al., US 7,106,372 (hereinafter, “*Bell*”).

In response, Applicant seeks to amend claims 1 and 9 for clarity. No new matter is being added.

Applicant submits that the Examiner should enter the offered amendment, because the amendment places the case in condition for allowance. 37 CFR §1.116; MPEP 714.12, 714.13.

B. Rejections under 35 U.S.C. 102(b)

Claims 1-3, 6, and 8-11 were rejected as being anticipated by *Kleinfelder*.

Kleinfelder discloses a digital pixel sensor (DPS) array wherein each pixel has an analog-digital convertor (ADC) and digital data is directly read out of the sensor array. *Kleinfelder*, Paragraph 1. As conceded by the Office Action (page 2), *Kleinfelder* provides for a sensor where each pixel unit has an ADC and associated memory within the pixel unit. A similar approach is discussed as background art in paragraphs 0013, 0017, and Figure 6 (elements 200A)

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of the instant application (Paragraph numbers are with respect to the application as published as US 2006/0103748).

Kleinfelder fails to teach or suggest a pixel-array scanning circuit that scans a pixel array to read analog signals from the individual pixels to an AD (analog to digital) memory separate from the pixel array, and consisting of a plurality of unit memories in a two-dimensional array corresponding to a pixel arrangement in the pixel array for storing the analog signals, where each unit memory stores a respective analog signal from a corresponding individual pixel and includes an analog to digital converter circuit, as recited in independent claim 1. Neither does *Kleinfelder* teach or suggest an AD memory, separate from the pixel array, where each unit memory stores a respective analog signal from a corresponding individual pixel and carries out AD conversion on said analog signals, the AD memory comprising a plurality of unit memories in a two-dimensional array corresponding to a pixel arrangement in the pixel array as recited in independent claim 9.

The Office Action asserted at pages 3-4 that Figure 6.1.1 and paragraph 5 of *Kleinfelder* disclose reading analog signals from the individual pixels to an AD memory. The assertion is not supported by the actual disclosure of the reference. Figure 6.1.1 shows that each pixel includes a photogate (PG) circuit, a comparator and an 8-bit memory. The digital code output of pixel level comparator (of the ADC) is latched into pixel-level (8-bit) memory (paragraph 5) after which it is read out of the memory one row at a time (paragraph 7). Thus, only digital data is read from the pixels.

Kleinfelder, if anything, teaches away from the present invention, wherein a pixel-array scanning circuit scans a pixel array to read analog signals from the individual pixels to an AD (analog to digital) memory, separate from the pixel array, consisting of a plurality of unit memories in a two-dimensional array corresponding to a pixel arrangement in the pixel array for storing said analog signals, each unit memory including an analog to digital converter circuit.

A finding that a claim is anticipated requires that “each and every element as set forth in

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the claim is found, either expressly or inherently described, in a single prior art reference.” Verdegaal Bros. v. Union Oil Co. of California, 814 F. 2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Because *Kleinfelder* fails to disclose at least the features of the claims discussed above, claims 1 and 9, and their respective dependent claims are patentable over *Kleinfelder*.

C. Rejections under 35 U.S.C. 103(a)

1. Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Kleinfelder* in view of *Gowda*.

Claim 4 depends from claim 1, and is patentable over the combination of *Kleinfelder* and *Gowda* for at least the same reasons as claim 1. *Gowda* is cited for disclosing an image sensor where pixels correspond to ADC in a variety of relationships. Whether or not this is true, the disclosure fails to cure the deficiency noted above.

2. Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Kleinfelder* in view of *Bell*.

Claim 7 depends from claim 1 and is patentable over the combination of *Kleinfelder* and *Bell* for at least the same reasons as claim 1. *Bell* is cited for disclosing reading pixels from a pixel array on a row by row basis. Whether or not this is true, the disclosure fails to cure the deficiency noted above.

C. Conclusion

In view of the foregoing, it is submitted that claims 1-4 and 6-11 are allowable and that the application is in condition for allowance. Early notice to that effect is respectfully requested.

If the Examiner believes that, for any reason, direct contact with Applicants' attorney would help advance the prosecution of this case to finality, the Examiner is invited to telephone the undersigned at the number given below, for purposes of arranging for a telephonic interview.

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Any communication initiated by this paragraph should be deemed an Applicant-Initiated Interview.

If any further fees are required in connection with the filing of this amendment, please charge the same to our Deposit Account No. 19-3140.

Respectfully submitted,

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